

What is claimed is:

1. A computer implemented decision support method of matching supply and demand between customer forecast demands and semiconductor foundry manufacturing capacity, comprising the steps of:

(1) providing Sales Demand Forecast Data, dividing said Sales Demand Forecast Data into categories:

- (i) providing a Minimum Support record;
- (ii) providing a Maximum Support record;

(2) providing Order Data, creating a Historical Support record or HS, using the Order Data as input to this function;

(3) using said Minimum Support record and said Maximum Support record and said Historical Support record as input records, dividing said three records into:

- (i) Fully Support Demand record;
- (ii) Initial Condition Demand record; and
- (iii) Expected Support Demand record;

(4) providing current salable capacity data and future capacity plan data;

(5) providing Customer Profiling Model data, said Customer Profiling Model data being sub-divided into categories of:

- (i) Customer Ranking;
- (ii) New Super Stars; and
- (iii) Planned or Intended Technologies of a foundry;

(6) providing a Product Profiling Model record, said Product Profiling Model comprising indexes:

- (i) "Hot" Products; and
- (ii) Market Trend;

(7) assigning a weight to each demand, creating future capacity plan data, said weight to each demand being:

- (i) a Fully Support Demand pool;
- (ii) an Initial Condition Demand pool; and
- (iii) an Expected Support Demand pool;

(8) using a Demand-Supply matching algorithm, dividing submitted demands of Fully Support Demand, Initial Condition Demand pool and Expected Support Demand pool into Supported Demand and Non-supported Demand, said algorithm being an arbiter in deciding which demand will be supported first, whereby the Demand-Supply matching algorithm stops selection or assignment of salable capacity after all salable capacity has been assigned or consumed; and

(9) combining Supported Demands and Non-Supported Demands, provided by the Demand-Supply matching algorithm, using an Index/Reporting Function, making combined results available to foundry management, thereby monitoring and adjusting of foundry production with orders placed, said monitoring and adjusting being performed by means of input to the customer profiling model and the product profiling model, indexes of the Customer

Profiling Model and the Product Profiling Model being adjustable by management.

2. The method of claim 1 wherein said providing Minimum Support represents a customer commitment of placing an order for a minimum quantity of semiconductor devices.

3. The method of claim 1 wherein said providing Maximum Support comprises a customer desire of placing an order for a number of semiconductor devices in a near future, the customer being unwilling to commit to this quantity at this time.

4. The method of claim 1, said Historical Support record comprising a quantity of product having been ordered by a customer during past two months or past six months or a one year period, said Historical Support record being a record of customer reference data reflecting an effort of providing the customer with at least a same product delivery in order to maintain good customer service, striving to provide the customer with a minimum production output during a current year and following years, thereby committing to the customer that the customer will be served first and in preference to other customers.

5. The method of claim 1, said Fully Support a customer record being equal to the Minimum Support record of said customer.

6. The method of claim 1, said Initial Condition record being equal to said Historical Supported record minus the Minimum Support record.

7. The method of claim 1, said Expected Support record being equal to the Maximum Support record minus the Fully Support record and the Initial Condition record.

8. The method of claim 1, said using a Demand-Supply matching algorithm comprises using current salable capacity data and future capacity plan data, said data being prepared in order to provide matching of Demand and Supply with a customer demand.

9. The method of claim 1, said Customer Ranking being assigning a ranking number to a customer in order to identify importance of the customer to the foundry, thereby reflecting the weight or importance of a customer.

10. The method of claim 1, said New Super Stars comprising start-up design houses having excellent products, said start-up houses having difficulties in gaining adequate production capacity from

semiconductor foundries, said semiconductor foundries evaluating potential of the start-up design house and providing adequate production capacity to these start-up design houses, whereby all start-up design houses are assigned one weight.

11. The method of claim 1, said Planned or Intended Technologies of a foundry comprising evaluating whether a customer can transfer a customer product to an intended technology of a foundry, giving priority production support to a product that is most likely to switch to advanced technology of the foundry, a different weight being assigned to different or none-transferable technologies.

12. The method of claim 1, said Product Profiling Model identifying a value of each new product, including indexes to help top management and sales managers to point out a market trend in near a future and future products that are expected to be in demand.

13. The method of claim 1, said "Hot" Products being products that a foundry is likely to fully support, whereby all products in this index receive the same weight.

14. The method of claim 1, said Market Trend addressing expected impact on a market of products that are still being developed, a weight being assigned to products in this index.

15. The method of claim 1, said assigning a weight to each demand comprises assigning a weight in accordance with management and operational principles and guidelines that have been established by a foundry, whereby each demand searches for items in the profiling indexes, that is the Customer Profiling Model and the Product Profiling Model, a demand meeting a criteria in these indexes being assigned a weight belonging to this index, said weight reflecting impact of the demand on a foundry.

16. The method of claim 15, said weight being assigned using as ground-rules:

assign a weight of 0 to all demands;

assign a weight value to Hot Products;

assign a weight value to products belonging to a Market Trend;

assign a weight value to New Super Star products;

assign a weight value to products that belong to a Planned or Intended Technology of a foundry; and

assign weight to products belonging to different customers.

17. The method of claim 1, additionally using the MSD system as a simulation tool, establishing different versions of the Customer Profiling Model and the Product Profiling Model, creating comparative reports of various different versions, assisting management in identifying required alternate approaches of matching production capabilities with sales demand.

18. A computer implemented system matching supply and demand between customer forecast demands and semiconductor foundry manufacturing capacity, comprising functions of:

(1) a Sales Demand Forecast Data function, dividing said Sales Demand Forecast Data into categories:

- (i) a Minimum Support record;
- (ii) a Maximum Support record;

(2) an Order Data function, creating a Historical Support record or HS, using the Order Data as input to this function;

(3) a function, using said Minimum Support record and said Maximum Support record and said Historical Support record as input records, dividing said three records into:

- (i) Fully Support record;
- (ii) Initial Condition record; and
- (iii) Expected Support record;

(4) a current salable capacity data and future capacity plan data function;

(5) a function providing Customer Profiling Model data, said Customer Profiling Model data being sub-divided into categories of:

- (i) Customer Ranking;
- (ii) New Super Stars; and
- (iii) Planned or Intended Technologies of the foundry;

(6) a function providing a Product Profiling Model record, said Product Profiling Model comprising indexes:

- (i) "Hot" Products; and
- (ii) Market Trend;

(7) a function assigning a weight to each demand, said weight to each demand being:

- (i) a Fully Support Demand pool;
- (ii) an Initial Condition Demand pool; and
- (iii) an Expected Support Demand pool;

(8) a function using a Demand-Supply matching algorithm, dividing submitted demands of Fully Support Demand pool, Initial Condition Demand pool and Expected Support Demand pool into Supported Demand and Non-supported Demand, said algorithm being an arbiter in deciding which demand will be supported first, whereby the Demand-Supply matching algorithm stops selection or assignment of salable capacity after all salable capacity has been assigned or consumed;



(9) a function combining Supported Demands and Non-Supported Demands, provided by the Demand-Supply matching algorithm, using an Index/Reporting Function, making combined results available to foundry management, thereby monitoring and adjusting of foundry production with orders placed, said monitoring and adjusting being performed by means of input to the customer profiling model and the product profiling model, indexes of the Customer Profiling Model and the Product Profiling Model being adjustable by management.

19. The system of claim 18, said function providing Minimum Support record comprising a customer commitment of placing an order for a minimum quantity of semiconductor devices.

20. The system of claim 18, said providing Maximum Support record comprising a customer desire of placing an order for a number of semiconductor devices in a near future, the customer being unwilling to commit to this quantity at this time.

21. The system of claim 18, said Historical Support record comprising a quantity of product having been ordered by a customer during past two months or past six months or a one year period, said Historical Support record being a record of customer reference data reflecting an effort of providing the customer

with at least a same product delivery in order to maintain good customer service, striving to provide the customer with a minimum production output during a current year and following years, thereby committing to the customer that the customer will be served first and in preference to other customers.

22. The system of claim 18, said Fully Support a customer record being equal to the Minimum Support record of said customer.

23. The system of claim 18, said Initial Condition record being equal to said Historical Supported record minus the Minimum Support record.

24. The system of claim 18, said Expected Support record being equal to the Maximum Support record minus the Fully Support demand and the Initial Condition demand.

25. The system of claim 18, said a Demand-Supply matching algorithm comprises using current salable capacity data and future capacity plan data, said data being prepared in order to provide matching of Demand and Supply with a customer demand.

26. The system of claim 18, said Customer Ranking being assigning a ranking number to a customer in order to identify importance of

the customer to the foundry, thereby reflecting the weight or importance of a customer.

27. The system of claim 18, said New Super Stars comprising start-up design houses having excellent products, said start-up houses having difficulties in gaining adequate production capacity from semiconductor foundries, said semiconductor foundries evaluating potential of the start-up design house and providing adequate production capacity to these start-up design houses, whereby all start-up design houses are assigned one weight.

28. The system of claim 18, said Planned or Intended Technologies of a foundry comprising evaluating whether a customer can transfer a customer product to an intended technology of a foundry, giving priority production support to a product that is most likely to switch to advanced technology of the foundry, a different weight being assigned to different or none-transferable technologies.

29. The system of claim 18, said Product Profiling Model identifying a value of each new product, including indexes to help top management and sales managers to point out a market

trend in near a future and future products that are expected to be in demand.

30. The system of claim 18, said "Hot" Products being products that a foundry is likely to fully support, whereby all products in this index receive the same weight.

31. The system of claim 18, said Market Trend addressing expected impact on a market of products that are still being developed, a weight being assigned to products in this index.

32. The system of claim 18, said weight assigned to each demand comprises assigning a weight in accordance with management and operational principles and guidelines that have been established by a foundry, whereby each demand searches for items in the profiling indexes, that is the Customer Profiling Model and the Product Profiling Model, a demand meeting a criteria in these indexes being assigned a weight belonging to this index, said weight reflecting impact of the demand on a foundry.

33. The system of claim 18, said weight being assigned using as ground-rules:

assign a weight of 0 to all demands;

assign a weight value to Hot Products;

assign a weight value to products belonging to a Market Trend;

assign a weight value to New Super Star products;

assign a weight value to products that belong to a Planned or Intended Technology of a foundry; and

assign weight to products belonging to different customers.

34. The system of claim 18, additionally using the MSD system as a simulation tool, establishing different versions of the Customer Profiling Model and the Product Profiling Model, creating comparative reports of various different versions, assisting management in identifying required alternate approaches of matching production capabilities with sales demand.

35. The method of claim 1, said Customer Profiling Model being provided and maintained by the MSD system in order to identify the value of each customer, said Customer Profiling Model comprising indexes to help top management and sales managers to identify relationships between customers, the major technologies of the foundry and the potential of new start-up customers, said Customer Profiling Model including indexes of Customer Ranking reflecting the weight of a customer to the foundry, New Super Stars reflecting a foundry evaluation of the potential of a start-up design house and providing adequate capacity to these

start-up design houses while assigning a weight to all start-up design houses, Planned or Intended Technologies of the foundry reflecting the foundry evaluation of whether a customer can transfer customer product to an intended technology of the foundry whereby product that is most likely to switch to advanced technology of the foundry will be supported first while different or none-transferable technologies in this index will be assigned a different weight.

36. The system of claim 18, said Customer Profiling Model being provided and maintained by the MSD system in order to identify the value of each customer, said Customer Profiling Model comprising indexes to help top management and sales managers to identify relationships between customers, the major technologies of the foundry and the potential of new start-up customers, said Customer Profiling Model including indexes of Customer Ranking reflecting the weight of a customer to the foundry, New Super Stars reflecting a foundry evaluation of the potential of a start-up design house and providing adequate capacity to these start-up design houses while assigning a weight to all start-up design houses, Planned or Intended Technologies of the foundry reflecting the foundry evaluation of whether a customer can transfer customer product to an intended technology of the foundry whereby product that is most likely to switch to advanced

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technology of the foundry will be supported first while different or none-transferable technologies in this index will be assigned a different weight.